

Appl. No. 09/678,923
Amdt. dated January 31, 2005
Reply to Office Action of November 30, 2004
Attorney Docket K-1633

REMARKS/ARGUMENTS

Claims 1-7 remain in this application. Claim 15 has been added. Claims 1-7 presently stand finally rejected. This Amendment is submitted in response to the Official Letter dated November 30, 2004. Applicant gratefully acknowledges the Examiner's approval of the proposed drawing correction filed on October 5, 2004. Favorable reconsideration of the application is respectfully requested.

1. Section 103(a) Rejection of Claims 1, 2, 6 and 7

Claims 1, 2, 6 and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimura et al. (US Patent No. 4,844,666) in view of Dotany (US Patent No. 5,083,887).

The Office Action provides:

"Referring to claim 1, Tsujimura et al. '666 discloses the claimed invention comprising, a tool body having an outer surface thereon and a central axis therein and including at least a first (including 24a, see Fig. 15) and second (including 24b, see Fig. 15) spiraling flute in the outer surface, each flute including a plurality of inserts (24a, 24b, see Fig. 15) secured therein to define an axial rake angle, wherein the axial rake angle of the inserts (24a, 24b, see Fig. 15) varies between flutes (e.g., changing from a1 to a4, see Fig. 15), and within each flute (changing from a1, a2, to a3 for the flute having inserts 24a, see Fig. 15) to provide all effective cutting. (Note the combination of the cutting flutes as shown in Fig. 15 provides all effective cutting.)

Note Tsujimura et al. also discloses the limitations described:

in claim 2, all of the inserts (24a, 24b, see Fig. 15) on the entire tool body being identical;

in claim 6, the cutting edges on adjacent inserts (such as 24a, 24a, see Fig. 15) in any flute do not circumferentially overlap; and

in claim 7, the inserts (24a, 24b, see Fig. 15) each having a cutting edge and the cutting edges on inserts with differing axial rake angles have differing cutting edge lengths (see Fig. 15).

Tsujimura et al. '666 discloses the claimed invention except for: providing single flute all effective cutting.

Tsujimura et al. '666's flutes have a big gap between the cutting edges on inserts in the axial direction. Chatter and vibration problems occur during the cutting process.

Dotany '887 discloses a helical cutting tool comprising the flute to provide single flute all effective cutting (see Fig. 1, and Col. 4, lines 14-16, regarding the overlapping relation in the axial direction indicated by dimension "A" as shown in Fig. 1)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsujimura et al.'666's tool to comprise the flute providing single flute all-effective cutting, as taught by Dotany '887, in order to have

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a continuous, non-interrupted cutting line to facilitate the smooth cutting process and chip removal (see Col. 4, lines 18 and 19) for the Tsujimura et al.'666's tool."

To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied reference must teach or suggest all the claim limitations (See MPEP §2143).

It is respectfully submitted that the Office Action does not meet the criteria for establishing a *prima facie* case of obviousness.

Neither Tsujimura et al. nor Dotany teaches or suggests the rake angle of the inserts varying between flutes and within each flute to provide single flute all effective cutting. Tsujimura et al. appears to teach varying axial rake angles of inserts within and between flutes, as acknowledged by the Examiner; it clearly does not teach or suggest single flute all effective cutting.

To overcome the deficiencies of Tsujimura et al., the Examiner has relied upon the teachings of Dotany. Although Dotany appears to teach single flute all effective cutting, Dotany produces single flute all effective cutting by utilizing identical inserts having identical axial rakes within and between flutes. There is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Tsujimura et al. with the teachings of Dotany.

On the contrary, Dotany appears to teach away from Tsujimura et al. and the claimed invention. Dotany specifically teaches that "the cutting edges of the cutting inserts form an inclination angle of 8-12 degrees with respect to the longitudinal axis of the tool; preferably, the inclination angle is approximately 10 degrees," i.e., Dotany appears to teach that the rake angles do not vary between flutes and within each flute.

Accordingly, it is respectfully submitted that one skilled in the art would not be inclined to modify Tsujimura et al. as taught by Dotany. For at least these reasons, Claim 1 is allowable over the applied art.

In addition, new Claim 15 has been added to include the additional limitation that the axial rake angles of at least three adjacent inserts within each flute either progressively decrease then increase or increase then decrease. Referring to FIG. 4, the axial rake angles

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are shown within each flute as varying by progressively decreasing and then increasing or increasing and then decreasing. Neither Tsujimura et al. nor Dotany teaches or suggests that the axial rake angles within each flute vary by progressively decreasing and then increasing or increasing and then decreasing.

Claims 2, 6 and 7 depend from Claim 1 and are likewise allowable over the applied art for at least the same reasons described above for Claim 1. Withdrawal of the rejection is respectfully requested.

In regard to the "Examiner's Response," Applicants indicated that Dotany appears to teach that the rake angles do not vary between flutes and within each flute. In contrast, Applicants specifically claim that the axial rake angle of the inserts varies between flutes and within each flute. The Examiner appears to ignore certain teachings of Dotany that teach away and only use those teachings that support the Examiner's position in an effort to overcome the deficiencies of Tsujimura et al. The Examiner is using hindsight reconstruction to pick and choose from the prior art only so much of the prior art that supports the Examiner's position to the exclusion of other teachings. It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. Based upon the foregoing, it is respectfully submitted that one skilled in the art would not modify Tsujimura et al. with the teachings of Dotany.

2. Section 103(a) Rejection of Claims 3-5

Claims 3-5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimura et al.'666 in view of Dotany '887 as applied to claims 1, 2, 6, and 7, and further in view of Dutschke et al. '603. The Office Action provides:

"Tsujimura et al. '666 in view of Dotany '877 discloses the claimed invention except for: the tool body including three spiraling flutes (in claim 3).

However, Tsujimura et al. '666's tool body includes four spiraling flutes (see Fig. 14).

Dutschke et al. '603 discloses a cutting insert comprising the tool body including three spiraling flutes (18, see Figs. 3a, 3b).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Tsujimura et al.'666/Dotany'887's tool to comprise the tool body including three spiraling flutes, as taught by

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Dutschke et al.'603, since it is just an alternative flute arrangement comparing with the structure of the Tsujimura et al.'666/Dotany'887's tool.

As to claim 4, Tsujimura et al.'666/Dotany'887 also discloses: all of the inserts (24a, 24b in Tsujimura et al.'666 and 4, 4 in Dotany'887) on the entire tool body being identical."

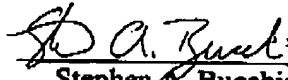
As to claim 5, Tsujimura et al. '666 also discloses: each insert (such as 24a, 24a, see Fig. 15) having an actual length longer than the cutting edge (since each cutting insert has an axial rake angle as shown in Fig. 15), and the actual lengths adjacent inserts (such as 24a, 24a, see Fig. 15) in any single flute do not circumferentially overlap.

Claims 3-5 depend from Claim 1 and are believed to be in condition for allowance for at least the same reasons as Claim 1 described above. For at least these reasons, Claims 3-5 are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

3. Conclusion

In view of the amendments and above remarks, it is believed that the application is in condition for allowance. Accordingly, an early Notice Of Allowance is respectfully requested.

Respectfully submitted,


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